# SCRUCCE Manua TAPE RECORDER PANASONIC



### PORTABLE CASSETTE TAPE RECORDER



**RQ-237S MECHANISM SERIES** 

RQ-421S

#### **SPECIFICATIONS**

Power Source:

AC: 90~109, 110~125, 200~219. 220~250 volts; 50/60 Hz

DC: 6 volts (Four "C" type batteries) car/boat battery (using optional

car/boat adaptor)

Power Consumption:

5 W

Motor: Transistors:

DC mechanical governor motor

2SB324(1)

M5115P(1) Diodes:

OA90Z(2) 1S1211(2) 2SR1K(1)

Maximum Output: Track System:

Recording System:

IC.

1.5 W (RMS) 2-track monaural AC bias 35 kHz

Erasing System:

AC erase Tape Speed: 1-7/8 ips.

Fast Forward Time:

Approx. 90 seconds with C-60 cassette

tape

Rewind Time:

Approx. 90 seconds with C-60 cassette

tape

Frequency Response:

Inputs:

"MIC" "AUX"

 $-71 \, \mathrm{dB}$   $600 \, \Omega$  $-20\,\mathrm{dB}$  150 k $\Omega$ 

Recording Time:

Speakers:

One hour with C-60 cassette tape

50~10,000 Hz

4" dynamic speaker

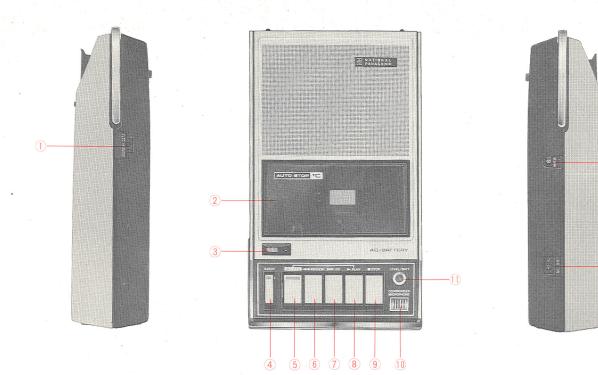
Dimensions:  $6-1/4(W) \times 2-7/8''(H) \times 10-7/8''(D)$ Weights: 4-1/2 lbs.

These specifications are subject to change in order to accommodate improvements in design.

MATSUSHITA ELECTRIC MATSUSHITA ELECTRIC TRADING CO., LTD



## **LOCATION OF PARTS**



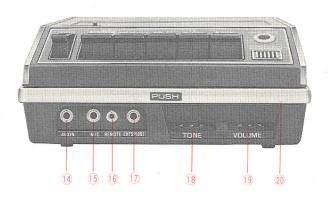


Fig. 1

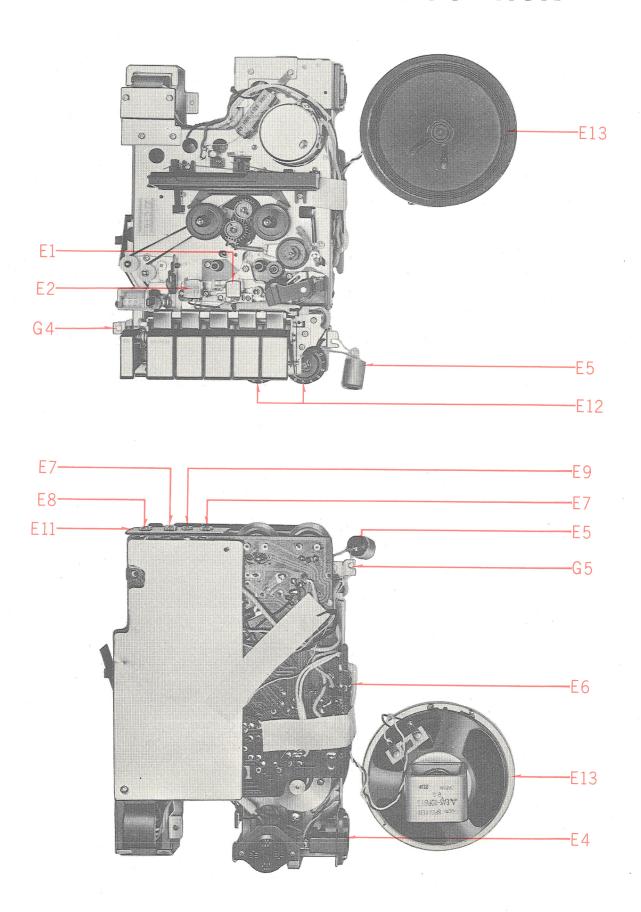
- Monitor switch
- 2 Cassette compartment cover
- 3 Tape counter
- Ejection button
- ⑤ Record button
- ® Rewind button
- Tast forward button
- Play button
- Stop button
- 10 Built-in microphone

- 1 Level meter
- 12 DC IN
- 43 AC socket
- Auxiliary input jack
- 15 External microphone jack
- 16 Remote jack
- ① External speaker jack
- ® Tone control
- Volume control
- 20 Handle

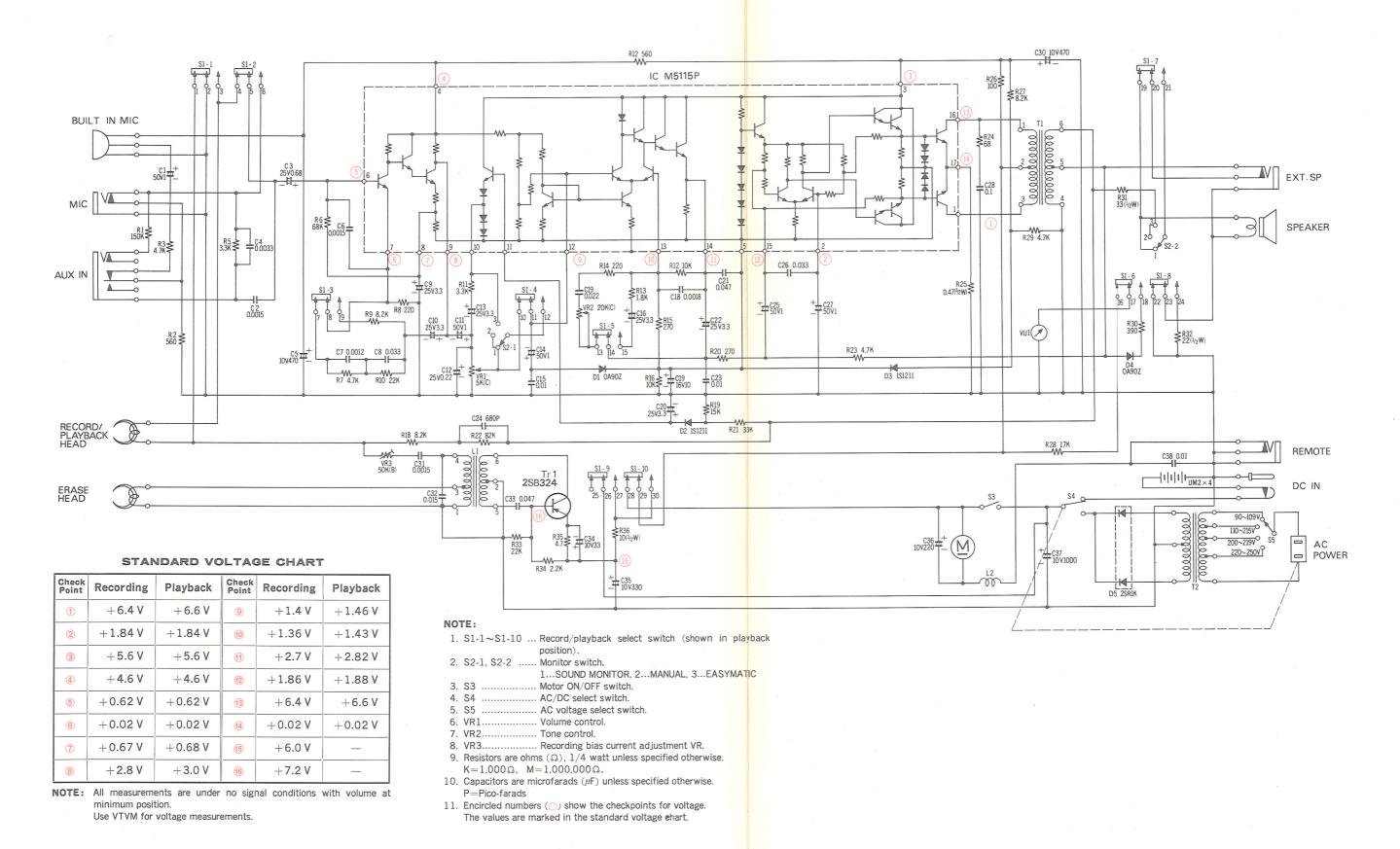
## STANDARD VALUE TO TEST

ITEM	VALUE	PARTS TO BE ADJUSTED	REMARKS
Recording bias current.	0.45±0.1 mA	VR3	Set the volume control to minimum.
Input level.	MIC $-71\pm4  dB$ AUX $-20\pm4  dB$		To obtain $50\pm10\mu\text{A}$ of recording current through the recording head. Set the volume control to maximum.
Bias Oscillation frequency.	y. 35 kHz		
Erase current.	9 V		Measure the value at both ends of erase head by VTVM.
Takeup tension.	50±10 gr-cm		<u></u>
Pressure of pressure roller.	400±50 gr	Pressure roller lever spring	

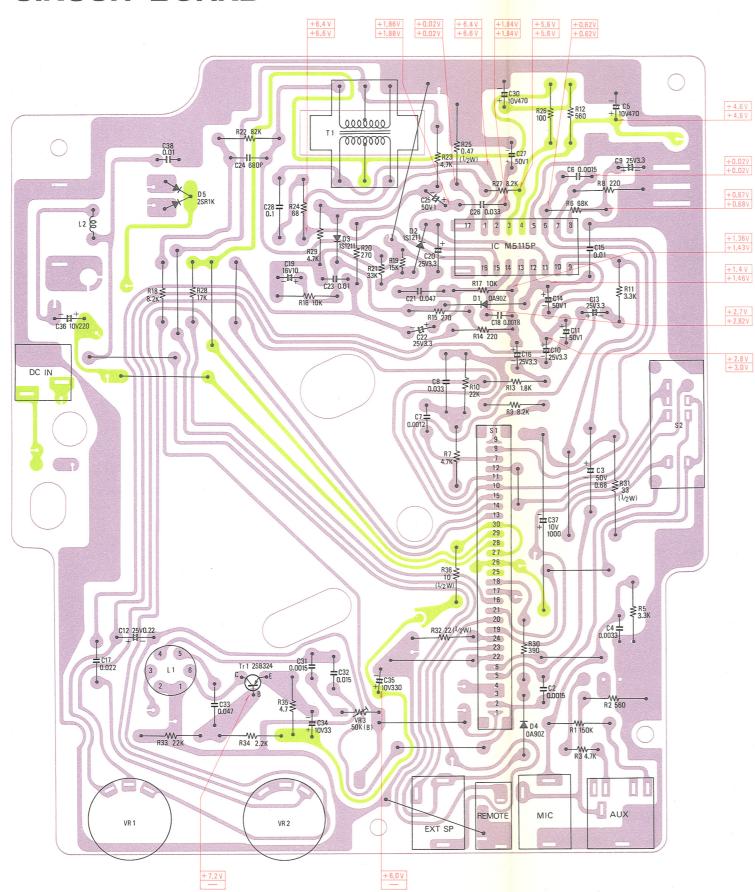
## **ELECTRICAL PARTS LOCATION**



## SCHEMATIC DIAGRAM MODEL RQ-421S



## **CIRCUIT BOARD**



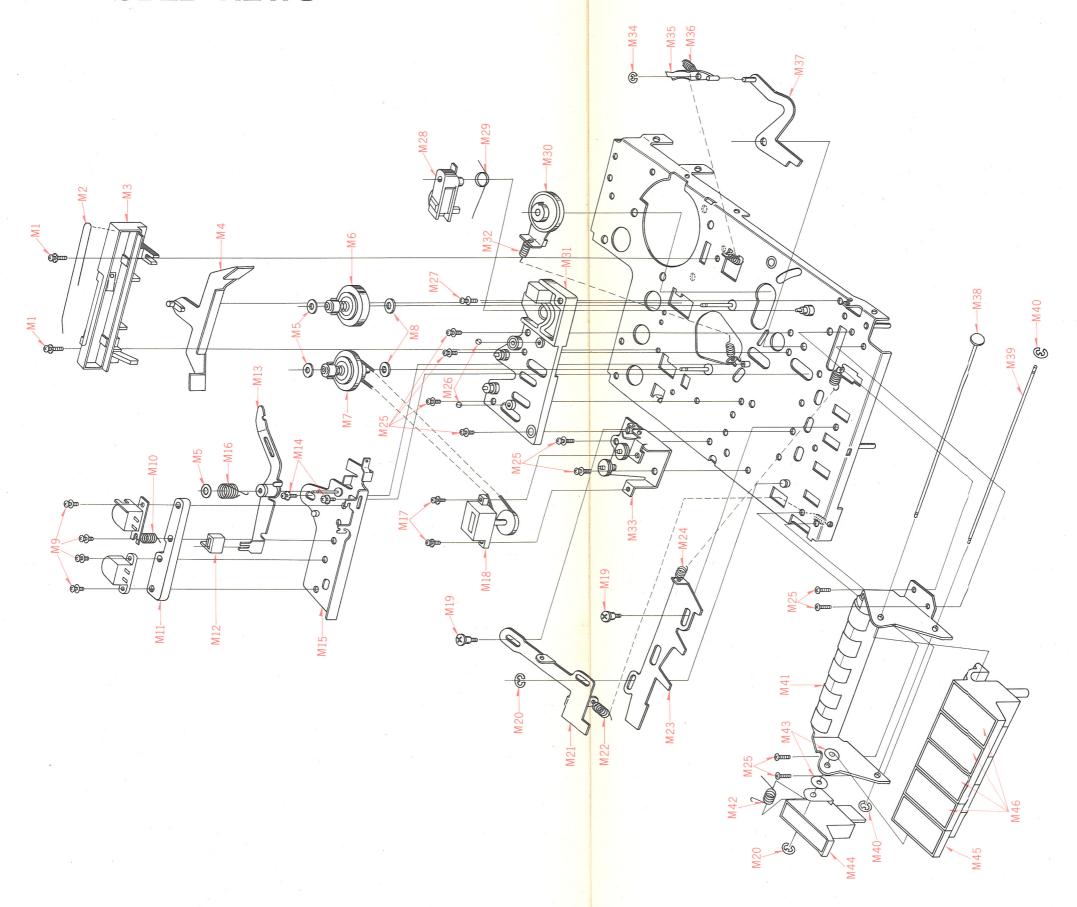
#### NOTE:

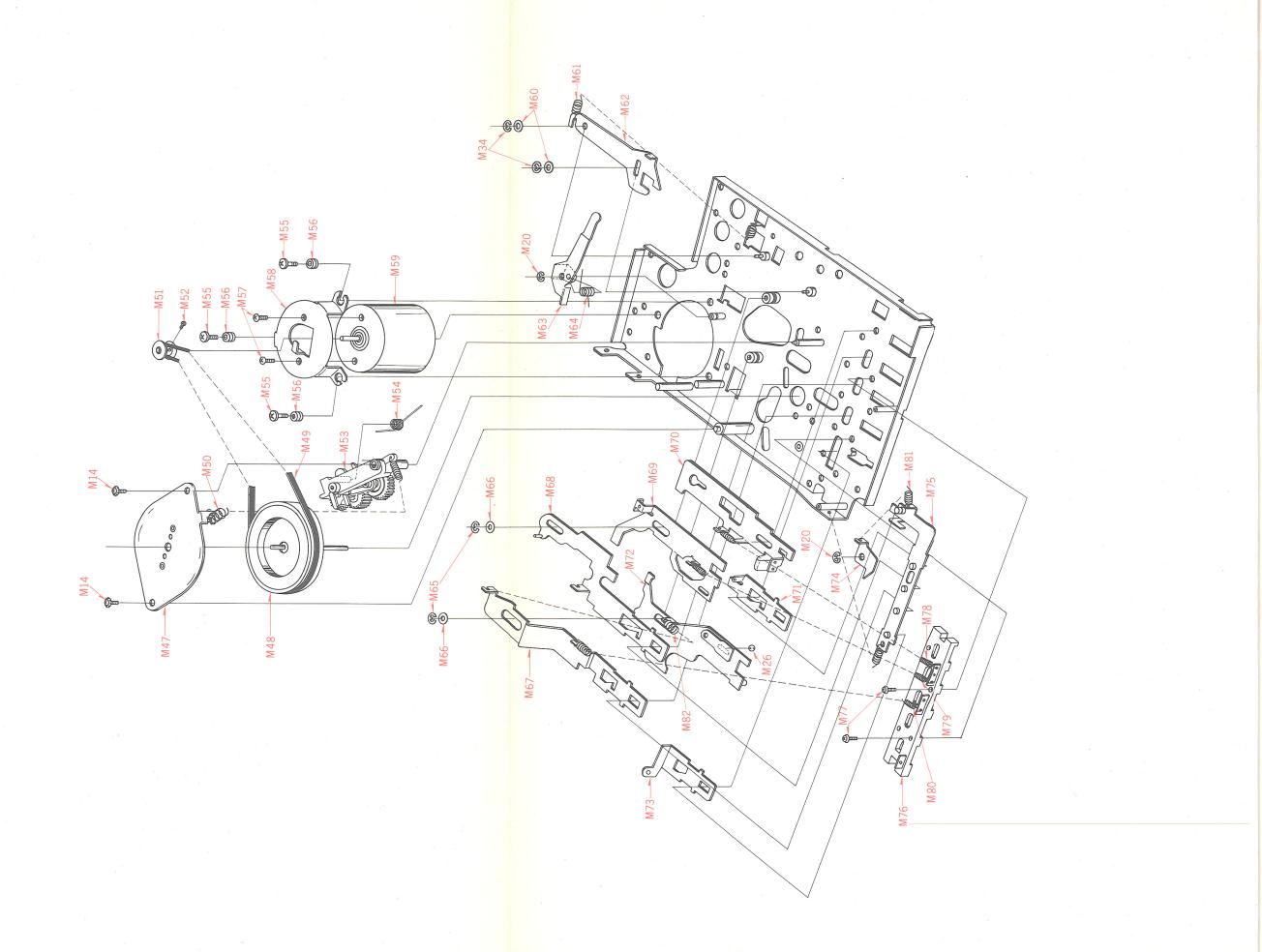
The circuit shown in green on the conductor is  $+\mbox{B}$  circuit.

Values indicated in \_\_\_\_ are DC voltages between the chassis and electrical parts.

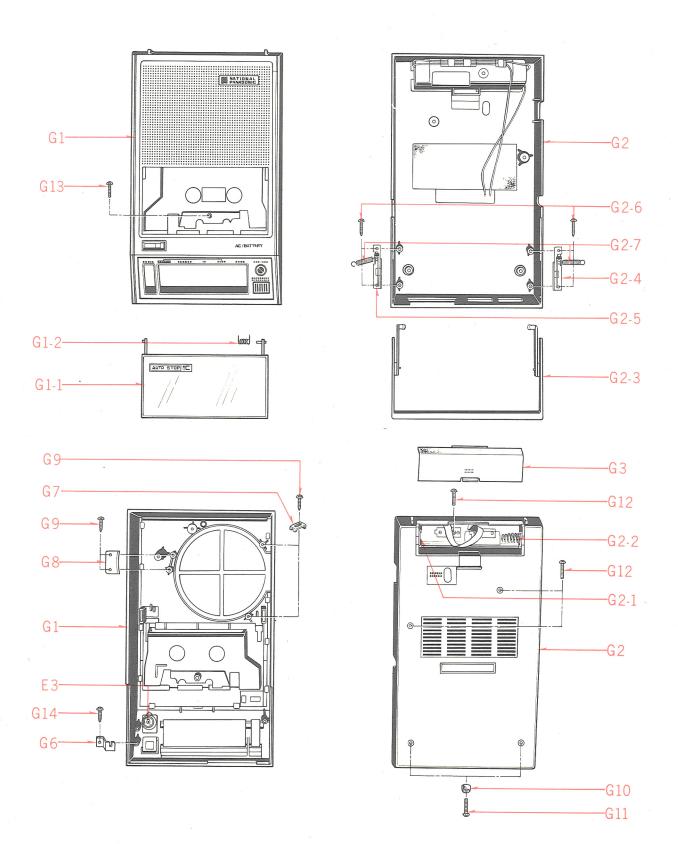
The upper values should be measured during recording and the lower values during playback.

## **EXPLODED VIEWS**





## **CABINET PARTS**



## REPLACEMENT PARTS LIST MODEL RQ-421S NATIONAL PANASONIC



**RQ-421S** 

#### NOTE:

- 1. Be sure to make your orders of Replacement Parts according to this List.
- 2. "x" in "Rank" Column indicates that the part are not supplyable.
- 3. "A, B and C" in "Rank" Column indicates the recommended stock of replacement parts. Refer to the recommended stock table on last page.
- 4. "★" in "Remarks" Column indicates New Parts.
- 5. "(so" in "Remarks" Column indicates ISO Screw or Nut.

#### NOTA:

- 1. Habrá que asegurarse que los pedidos de piezas de repuesto se hagan según esta lista.
- 2. "X" marcado en la columna "Rank", quiere decir que dichas piezas no pueden ser provistas.
- 3. "A, B y C" marcadas en la columna "Rank" indican el surtido que se recomienda tener de dichas piezas de repuesto.
- 4. "★" marcado en la columna "Remarks", quiere decir que las piezas son nuevas.
- 5. "(ISO" marcado en la columna "Remarks", quiere decir que es un tornillo o tuerca "ISO".

#### NOTE:

- 1. Bien s'assurer de se conformer à la liste suivante pour les commandes de pièces de rechange.
- 2. "'x", dans la colonne "Rank", indique qu'il n'est pas possible de fournir ces pièces.
- 3. "A, B et C", dans la colonne "Rank", indiquent le stock recommandé de pièces de rechange. Se reporter en dernière page au tableau des stocks/recommandés.
- 4. "\*", dans la colonne "Remarks", indique les pièces nouvelles.
- 5. "(ISO", dans la colonne "Remarks", indique une vis ou un écrou ISO.

#### HINWEIS:

- 1. Bestellen Sie Ihre Ersatzteile genau nach dieser Liste.
- 2. Mit "X" in der "Rank" Spalte aufgeführte Teile können nicht geliefert werden.
- 3. "A, B und C" in der "Rank" Spalte zeigt Ihnen den Vorrat der Ersatzteile an.
- 4. "★" in der "Remarks" Spalte bedeutet "neue Teile".
- 5. "(Iso" in der "Remarks" Spalte bedeutet ISO-Schraube oder Mutter.

#### 按:

- 1. 關於代用零件之訂購, 務請依照此表而行之爲荷。
- 2. 「等級」(Rank) 一欄中之"×"標記表示該零件無從供應。
- 3. 「等級」(Rank) 一欄中之"♠, 禹, ℃"標記表示該零件有存貨, 值得介紹。 請參照最後一頁的「值得介紹存貨表」。
- 4.「備考」(Remarks)一欄中之"★"形符號標記表示該零件爲新出品。
- 5. 「備考」(Remarks)一欄中之 "(ISO)" 符號標記表示國際標準化機構(ISO) 式螺絲或螺母。

Rank				Dag /	Price (Per Pce.)	
капк	Ref. No.	Description	Part No.	Pcs/ Set		Remarks
		MECHANICAL PARTS				
C	M1	Sems Screw ⊕M2.6×8	XYN26+E8	2		COMMON
В	M2	Brake Spring	QBS1057	1		*
C	МЗ	Cassette Retainer Unit	QXQK0015	1		*
В	M4	Brake	QBJ1941	1		*
C	M5	Nylon Snap Washer	QWQ1124	3		RQ-227SE, 237S
A	M6	Tapeup Reel Table Assembly	QXP0319	1		RQ-227SE, 237S
A	M7	Supply Reel Table Assembly	QXP0320	1		99
C	M8	Oil Prevent Washer (1)	QBJ3220	2		29
C	M9	Screw ⊕M2×12	XSN2+12	4		COMMON
В	M10	Head Spring	QBC1103	1		RQ-209S, 219S, 221S, 237S
			,			2210, 2570
C	M11	Head Spacer	QBJ2027	1		*
В	M12	Detecting Piece	QBJ1538	1		RQ-222S, 222AS 237S
C	M13	Detecting Lever Assembly	QXL0482	1		RQ-227SE
C	M14	Sems Screw ⊕M2.6×6	XYN26+E6	4		COMMON
×	M15	Head Base Assembly	QXK0054	1		*
C	M16	Auto Stop Detecting Lever Spring	QBN1188	1		DO 22785
C	M17	Sems Screw ⊕2×5	XYN2+E5			RQ-227SE COMMON
A	M18	Tape Counter	QDC0044	2		
C	M19	Screw	QHQ1168	.1		RQ-237S, 238FHS
C	M20	Stop Ring E3¢	XUC3FK	4	,	<b>★</b> COMMON
	2		- 4			
C	M21	Eject Lever-C Assembly	QXL0618	1		*
C	M22	Eject Lever-C Spring	QBT1604M	1		*
C	M23	Eject Lever-D Assembly	QXL0619	1		*
C	M24	Eject Lever Spring	QBT1490	1		RQ-237S, 238FHS
C	M25	Sems Screw ⊕2.6×6	XYN26+C6	10	,	COMMON
В	M26	Steel Ball 2.5¢	QDK1012	3		RQ-227SE, 237S
	M27	Sems Screw ⊕M2.6×10	XYN26+C10	1		COMMON
-	M28	Pressure Roller Assembly	QXL0450	1		RQ-227ES, 237S

Rank	Ref. No.	Dogguinting	D	Pcs/	Price (Per Pce.)	_
Naiik	1/61. 140.	Description	Part No.	Set		Remarks
C	M29	Pressure Roller Spring	QBN1157	1		RQ-227SE, 2375
В	M30	Idler Lever Assembly	QXL0441	1		99
×	M31	Upper Base Assembly	QXK1331	1		*
B	M32	Idler Lever Spring	QBT1558M	1		RQ-227SE, 237S RS-267S
×	M33	Counter Angle Assembly	QXE0171	1		*
C	M34	Stop Ring E2.5∳	XUC25FK	3		COMMON
C	M35	Auto Stop Driving Pawl	QBJ1656	1		RQ-227SE, 237S
C	M36	Auto Stop Spring	QBTK0014	1		*
C	M37	Auto Stop Driving Lever Unit	QXL0622	1		*
C	M38	Push Button Shaft-A	QMS2205	1		*
C	M39	Push Button Shaft-B	QMS2206	1		*
C	M40	Stop Ring E2∳	XUC2FK	2		COMMON
×	M41	Push Button Frame Assembly	0.750100	1		
C	M42	Push Button-B Spring	QXE0169	1		*
C	M43	Poly Washer 5.2×8×0.5	QBN1263	1		*
A	M44	Push Button (3) Assembly	QBJ3283	1		*
A	M45	Push Button (2) Assembly	QXB0135	1		*
	WIFS	Fusit Buttoff (2) Assembly	QXB0134	1		*
A	M46	Push Button (1) Assembly	QXB0133	4		*
×	M47	Flywheel Retainer Unit	QXH0095	1		RQ-227SE, 237S
A	M48	Flywheel Assembly	QXF0063	1	×	,,
A	M49	Flywheel Belt	QDB0141	1		99
C	M50	Fast Forward Lever (2) Spring	QBT1485M	1		29
В	M51	Motor Pulley	QDP1378	1		DO 22705 0270
	M52	Screw ⊕M2×3	XSN2+3	1		RQ-227SE, 237S
	M53	Fast Forward Frame Assembly	QXL0451	1		COMMON
	M54	Gear Lever Spring	QBN1196	1		RQ-227SE, 237S
С	M55	Screw	QMS1833	3		29
С	M56	Motor Rubber	00010554			D0 00===
	M57	Screw ⊕2.6×3	QBG1055A XSN26+3	3		RQ-227SE, 237S

	D (			Pcs/_	Price (Per Pce.)	
Rank	Ref. No.	Description	Part No.	Set		Remarks
×	M58	Motor Angle	QMA1779	1		
A	M59	Motor	QDM0645	1		RQ-227SE
C	M60	Fiber Washer 3.2×9×0.5	QBK7124	2		COMMON
B	M61	Idler Spring	QBTK0013	1		*
C	M62	Lock Plate-B	QML2341	1		*
C	M63	Rewind Lever-B	QML2337	1		*
C	M64	Rewind Lever Spring	QBN1262	1		*
C	M65	Stop Ring E5¢	XUC5FK	2		COMMON
21						
C	M66	Fiber Washer 6.2×11×1.0	QBK7130	2		RQ-227SE, 237S
C	M67	Playback Lever A	QML2331	1		*
C	M68	Fast Forward Lever A Assembly	QXL0616	1		*
C	M69	Fast Forward Lever B Assembly	QXL0624	1		*
C	M70	Record Lever Assembly	QXL0620	1		* *
C	M71	Rewind Lever-A	QML2336	1		*
C	M72	Playback Lever-B Assembly	QXL0617	1		*
С	M73	Stop Lever	QML2335	1		*
С	M74	Lock Supporter	QML2342	1		*
×	M75	Lock Plate-A Unit	QXH0141	1		*
C	M76	Lever Guide Assembly	QXL0623	1	2	*
С	M77	Sems Screw ⊕2.6×8	XYN26+C8	2		COMMON
C	M78	Record Lever Spring-B	QBT1617M	1		*
С	M79	Record Lever Spring	QBT1486M	1	2	RQ-227SE, 237S
C	M80	Playback Lever Spring	QBT1536M	1		"
		,			-	
C	M81	Lock Supporter Spring	QBT1605	1		*
C	M82	Playback Lever-B Spring	QBT1603M	1		*
		RESISTORS				
В	R1	Carbon Resistor 150 KΩ 1/4 W	ERD14TJ154	1		
В	R2, 12	" 560Ω 1/4 W	ERD14TJ561	2		3
В	R3	" 4.7 KΩ 1/4 W	ERD14VJ472	1		

Rank	Ref. No.	Daca	rintion		Dov+ No	Pcs/_	Price (Per Pce	.)
valik	1/61. 140.	Desc	ription		Part No.	Set		Remarks
В	R5, 11	Carbon Resistor	3.3 ΚΩ	1/4 W	ERD14TJ332	2		
В	R6	"	68ΚΩ	1/4 W	ERD14TJ683	1		
В	R7, 23, 29	Carbon Resistor	4.7 ΚΩ	1/4 W	ERD14TJ472	3		
В	R8, 14	99	220Ω	1/4 W	ERD14TJ221	2		
B	R9, 18	29	8.2 ΚΩ	1/4 W	ERD14TJ822	2	2	
B	R10, 33	99	22 ΚΩ	1/4 W	ERD14TJ223	2		
В	R13	99	1.8 ΚΩ	1/4 W	ERD14TJ182	1		
В	R15, 20	Carbon Resistor	270Ω	1/4 W	ERD14TJ271	2		
В	R16, 17	"	10ΚΩ	1/4 W	ERD14TJ103	2		
В	R19	"	15ΚΩ	1/4 W	ERD14VJ153	1		
В	R21	22	33 ΚΩ	1/4 W	ERD14VJ333	1		
В	R22	29	82ΚΩ	1/4 W	ERD14TJ823	1		
В	R24	Carbon Resistor	68Ω	1/4 W	ERD14TJ680	1		
B	R25	Wire-wound Resist	or 0.47Ω	1/2 W	ERM12PKR47	1		
В	R26	Carbon Resistor	100Ω	1/4 W	ERD14TJ101	1		
В	R27	,,	8.2 ΚΩ	1/4 W	ERD14VJ822	1		
В	R28	"	17ΚΩ	1/4 W	ERD14TJ173	1		
			-					
В	R30	Carbon Resistor	390Ω	1/4 W	ERD14TJ391	1		
В	R31	Solid Resistor	33Ω	1/2 W	ERC12GK330	1		
В	R32	29	22Ω	1/2 W	ERC12GK220	1		
В	R34	Carbon Resistor	2.2 ΚΩ	1/4 W	ERD14TJ222	1		e
В	R35	27	4.7Ω	1/4 W	ERD14TJ4R7	1		
		-	. 1					
В	R36	Solid Resistor	10Ω	1/2 W	ERC14GK1000	1		
	(i)							
		VARIABLE F	RESIST	ORS			9	
A	VR1	Variable Resistor	5 k	(Ω (C)	EVJA2AT12C53	1		RQ-221S
A	VR2	22		(Ω (C)	EVJA2AT12C24	1		*
A	VR3	Semi-fixed Variable	Resistor	(Ω (B)	EVLS3AA00B54	1		*
			50 r	(U)		-		1.

D - 1	D-f N				Pcs/_	Price (Per Pce.)	
Rank	Ref. No.			Part No.	Set		Remarks
	C1, 11, 14, 25,	CAPACITO					
В	27	Liecti diytic Capacitor	1 <i>μ</i> F	ECEA50V1L	5		
C	C2, 6, 31	Mylar Capacitor	0.0015 <i>μ</i> F	ECQM05152MZ	3		
В	C3	Electrolytic Capacitor	0.68 <i>µ</i> F	ECEA50VR68H	1		
C	C4	Mylar Capacitor	0.0033μF	ECQM05332MZ	1		
В	C5, 30	Electroltic Capacitor	470 <i>μ</i> F	ECEA10V470L	2		
C	C7	Mylar Capacitor	0.0012 <i>µ</i> F	ECQM05122MZ	1		
C	C8, 26	>>	0.033 <i>μ</i> F	ECQM05333MZ	2		
B	C9, 10, 13, 16, 20, 22	Electrolytic Capacitor	3.3 <i>µ</i> F	ECEA25V3R3L	6		
B	C12	22	0.22 <i>µ</i> F	ECEA25VR22M	1		
C	C15, 23, 28	Mylar Capacitor	0.01 <i>µ</i> F	ECQM05103MZ	3		
C	C17	Mylar Capacitor	0.022 <i>µ</i> F	ECQM05223MZ	1		
C	C18	"	0.0018 <i>μ</i> F	ECQM05182MZ	1		
В	C19	Electrolytic Capacitor	10 <i>μ</i> F	ECEA16V10L	1		
C	C21, 33	Mylar Capacitor	0.047 <i>μ</i> F	ECQM05473MZ	2		
С	C24	Styrol Capacitor	680 pF	ECQS1681KZ	1		
C	C28	Mylar Capacitor	0.1μF	ECQM05104MZ	1		
C	C32	"	0.015μF	ECQM05153KZ	1		
В	C34, 39	Electrolytic Capacitor	33µF	ECEA10V33L	2		
В	C35	27	330µF	ECEA10V330L	1		
В	C36	"	220µF	ECEA10V220L	1		
		9		LOL/10 V 22 OL	1		
В	C37	Electrolytic Capacitor	1000μF	ECEA10V1000L	1		,
		TRANSIST	OR				
A	Tr1	Transistor	2	2SB324	1 _		COMMON
		DIODES					
A	D1, 4	Diode	•	OA90Z	2	,	COMMON
A	D2, 3	Silicon Diode		1\$1211	2		RQ-221S, 235S RS-253S, 267S
A	D5	"		2SR1K	1		RS-253S, 267S

Rank	D ( ):				Price (Per Pce.)	
Kank	Ref. No.	Description	Part No.	Pcs/ Set		Remarks
		INTEGRATED PART			* * * * * * * * * * * * * * * * * * *	ž.
В	IC	Integrated Circuit	M5115P	1	,	RS-253S, 267S
		TRANSFORMERS				
A	T1	Output Transformer	QLA0368	1		RQ-227SE
A	T2	Power Transformer	QLP0669	1		*
		COILS				
A	L1	Oscillator Coil	QLB0155	1		*
B	L2	Choke Coil	QLP0105	1		COMMON
		SWITCHES				
A	S1	Slide Switch (Record/playback selector)	QSS1142	1		RQ-238FHS
A	S2	Slide Switch (Monitor)	QSS1129	1		RQ-227SE, 237
A	\$3	Leaf Switch (Motor)	QSB0169B	1		RQ-209DS, RS-262US,803I
B	S4	AC/DC select switch with AC socket	Ref. E4	(1)		RS-202US,8U3U
A	S5	Rotary Switch (AC voltage selector)	QSR0005B	1		RQ-221S, 226S 229S, 238FR
		ELECTRICAL PARTS				*
A	E1	Record/playback Head	QWY0107Z	1		RQ-222S, 222A 227SE
A	.E2	Erase Head	WY235X	1		RQ-227SE, RS-270US
A	E3	Lever Meter	QSL0065	1		RQ-212S, 221S
В	E4	AC Socket with S4	QJS0316S	1		RQ-238FHS (IS
A	E5 ,	Condenser Microphone	WM089DZ	1		*
В	E6	DC IN Jack	0.1401.00			
-	E7	M3 Jack	QJA0128	1		RQ-227SE, 2375
	E8	M3 Jack with Switch	QJA0125 QJA0127	2		99
	E9	M2 Jack	QJA0127 QJA0126	1		,,
-	E10	Heat Sink	QTH1028	1		"
			Z IIIIOCO	1		COMMON
C	E11	Jack Board	QGJ1216	1		*
A	E12	Volume Knob	QGT1121	2		RQ-209DS, 221S
A	E13	Speaker	EAS10P87S	1		412S, 417S ★

Rank	Dof No	Description	D Al-	Pcs/_	Price (Per Pce.)	
Kank	Ref. No.	Description	Part No.	Set		Remarks
		CABINET PARTS	*			. A
В	G1	Body Case Assembly (without Speaker)	QYB0320	1		*
A	G1-1	Cassette Lid	QKF1425	1		* .
В	G1-2	Cassette Lid Spring	QBN7072	1		*
В	G2	Bottom Case Assembly	QYC0144	1	9	*
C	G2-1	Battery Terminal ⊕	QJB0047	2		RQ-209S, 209DS 221S, 412S
C	G2-2	Battery Spring ⊝	QJB0004	2		RQ-209S, 209DS 221S, 412S
C	G2-3	Handle	QKH1072	1		221S, 412S ★
C	G2-4	Lock Plate Angle Unit-R	QYQ0219	1	-	*
C	G2-5	Lock Plate Angle Unit-L	QYQ0220	1		*
C	G2-6	Tapping Screw ⊕PH3×8	XTN3+8	4		COMMON
	42.0	Tapping colon of the Xo	X1105 1 G	+ +		CONTINUO
C	G2-7	Handle Spring	QBT1621M	2		*
В	G3	Battery Cover Assembly	QYF0102	1		*
C	G4	Case Angle-A	QKT1656	1		*
C	G5	Case Angle-B	QKT1657	1		*
C	G6	Microphone Holding Plate	QKT1636	1		*
C	G7	Speaker Holding Metal	QKT1172	2		RQ-238FHS, 238FJS
C	G8	Speaker Holding Metal-A	QKT1376	(1)		238FJS
C	G9	Tapping Screw ⊕PH3×8	XTN3+8	4		COMMON
C	G10	Rubber Foot	QKA1067	2		*
C	G11	Screw ⊕2.6×14	XSN26+14FC	2		COMMON
C	G12	Screw ⊕2.6×6	XSN26+6FC	3		COMMON
C	G13	Screw ⊕2.6×11	XSN26+11FC	1		22
C	G14	Tapping Screw ⊕3×8	XTN3+8F	1		22
		ACCESSORIES		5		
A	A1	Cassette Tape (Demonstration)	QFT1TCCNRJZ	1		COMMON
A	A2	Earphone	EAS2SB1	1		99
A	A3	Radio Cord-R	RP8021 (QEB0017)	1		99
В	A4	AC Power Cord with Cap	QFC1065	1		RQ-238FHS

Rank	Ref. No.	Description	David Na	Pcs/	Price (F	Per Pce.)	D
IValik	Net. No.	Description	Part No.	Pcs/ Set			Remarks
A	A5	AC Plug Adaptor	QJP0603S	1			COMMON (ISO
В	A6	Hand Case	QFK0074	1			*
В	A7	Instruction Book	QQT1715	1			*
			-, -8				
		PACKINGS					
C	P1	Inside Carton	QPN2694	1			*
C	P2	Inner Cushion-A	QPN2695	1			*
C	P3	Inner Cushion-B	QPN2696	1			*
C	P4	Dust Cover	XZB26X36A05	1			RQ-209DS
C	P5	Accessory Box	QPW1125	1			RS-256US, 262US

## RECOMMENDED STOCK OF REPLACEMENT PARTS

Rank of Part		Estimated Selling Q'ty of Tape Recorder Set							
	Less than 50	100	300	500	1,000	2,000			
A rank Parts	2	5	15	20	40	80			
B rank Parts	1	2	5	10	20	40			
C rank Parts	0	1	3	5	10	20			